# LCN Fund Full Submission
# _Supplementary Answer Form_

Tick if this answer is Confidential: ☐

Tick if this answer has been provided verbally: ☐

| Project code: | UKPNT205 | Question Number | 5 |
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| Question date | 29 August 2013 | Answer date | 2 September 2013 |
| Submission section question relates to | Section 2: Project description | | |
| Topic | Technical | | |
| Question | What impact will the self-disconnect nature of prepayment metering have on the analysis of the network data and benefits? | | |
| Notes on question | | | |
| Answer | | | |

Self-disconnect nature of prepayment metering

Self-disconnect is when a customer is unable to use power because they have run out of credit. The prepayment meter disconnects until credit is restored or until an emergency credit is selected if available. We also recognise that there is an associated issue whereby customers 'self-ration' their energy use to save money.

The working paper, 'The Self-Disconnection Among Pre-Payment Customers – A Behavioural Analysis', Philipp-Bastian Brutscher, March 2012 used metering data of 2.3 million electricity pre-payment customers to study how often households with an electricity pre-payment meter tend to self-disconnect over the course of a year. The study defined self-disconnection as a situation in which the customer is off supply and has exhausted all credit available (including emergency credit). The main finding was that every year only about a fifth of prepayment customers self-disconnect; many for a relatively short period of time and for some the total duration without electricity due to self-disconnection was found to be considerable (12%-18% last for more than 3 days). The study also found that the main driver of self-disconnection was due to financial constraints.

Recognising the self-disconnect nature of those on prepayment and that there are instances whereby customers are without electricity for a considerable length of time. Self-disconnection (other than accidental) and self-rationing, especially for vulnerable customers is a matter of concern.

V-CEE will provide advice on energy and energy saving techniques to trial participants which will hopefully make them less susceptible to self-disconnect. Furthermore, in the event of a self-disconnect amongst the vulnerable V-CEE trial participants, from a societal / welfare perspective it will be treated with importance and further investigated.

Part of British Gas' Policy for Credit Energy customers is that they do not knowingly disconnect vulnerable customers at any time of year and they have significant support services to assist vulnerable customers to help manage and pay their energy bills. See attached leaflet titled "Ways we can help".

Unfortunately, due to the nature of 'dumb' prepayment meters, once a customer has run out of credit and 'friendly credit' and is outside of the 'non-disconnection' period, supply would ultimately 'self-disconnect'.

Smart metering provides significantly more flexibility in this situation and could potentially prevent the 'self-disconnection' of vulnerable customer's altogether.

Whilst it is still expected that the meters will 'self-disconnect' much in the same way as 'dumb' prepayment meters, British Gas Smart Metering is currently evaluating implementation options for their prepayment smart meter roll out and are looking to take advantage of the additional smart meter functionality to help protect vulnerable customers. Their current preferred solution, would involve remotely sending a credit to the meter with a weekly collection rate, agreed as affordable with the customer, in order to keep any vulnerable customers on supply.

It is envisioned for V-CEE that British Gas will install prepayment meters in line with their BAU service, currently scheduled for quarter four 2014 and that the prevention of 'self-disconnect' would only apply to identified vulnerable customers within the project.

Impact on the analysis of the network data and benefits

*Impact on analysis of network data*

Metering will remain powered and active, collecting data on a routine basis, in parallel to the network monitoring. For these reasons the data will first and foremost be analysed as valid data.

*Impact on analysis of network benefits*

Self-disconnection is not considered to be a network benefit. This is for the reasons that during self-disconnection:

- there is no customer demand, and they are unable to offer any service; and
- this form of demand reduction can have significant consequences for the customers' health and wellbeing.

We will instead concentrate on ensuring instances of self-disconnect have not increased, and predicting what the load would have been had the disconnect not

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| | taken place.<br><br>This will result in the first form of analysis and network modelling which will include periods of disconnection, enhancing the learning outcomes.<br><br>Two forms of analysis will be undertaken:<br><br>1. *Trend to the periods of self-disconnect and why the participants were self-disconnecting*<br><br>The periods of self-disconnect will be captured and investigated to establish whether there is a pattern.<br><br>This finding in the data would be followed up by qualitative research to understand how and why the participants were self-disconnecting. How they felt about it, and whether they regarded it as them exercising control over their energy, or an imposition from other factors forcing them to disconnect. This will identify when self-disconnection has been an action due to loss of credit or as a means of 'self-ration', where customers limit energy use to save money. Data collection from trial participants will be complaint with the Data Protection Act 1998.<br><br>2. *Assess network impacts*<br><br>a) Assessment of the demand pattern if the self-disconnection or 'self-ration' event had not occurred<br><br>This analysis will use the captured self-disconnect periods that we will treat as 'missing data' and we will try imputing this missing data (i.e. 'filling it in using statistical methods) and comparing the reconstructed data with data from non-prepayment metered trial participants. This reconstruction of the data will be kept separate from the original data and analysis and modelling will be done independently to ensure no corruption of the original data. This will allow for comparison of findings.<br><br>This analysis will allow us to model the demand patterns had the self-disconnect (loss of credit) or 'self-ration' event not occurred.<br><br>b) *Impact of self-disconnection or 'self-ration' event on the network*<br><br>Complete analysis to determine the impacts from these events on the network. |
| Attachments | See attached leaflet titled "Ways we can help" |
| Verbal Clarifications<br><br>(Consultants) | |